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MINOR NOTICES.

DR. ROLAND THAXTER,³ in continuing his studies of Laboulbeniaceae, has described numerous new species, adding no fewer than forty to the genus *Laboulbenia*, and describing as new genera *Herpomyces* (9 spp.), *Acallomyces*, *Ecteinomycex*, and *Coreomyces*.—J. M. C.

THE NINTH PART of Wiesner's *Die Rohstoffe des Pflanzenreiches*⁴ concludes the nineteenth section on *Unterirdische Pflanzentheile* (to p. 571), contains the twentieth part on *Blätter und Kräuter* (pp. 572–625), and begins the twenty-first part on *Blüthen und Blüthentheile*.—J. M. C.

MISS ALICE EASTWOOD has published a *Flora of the South fork of King's river*, being no. 27 of the publications of the Sierra club. This is the first attempt to prepare a manual of the flora of the southern Sierra Nevada; and the purpose of this preliminary publication is both to record the plants of an interesting region and to provide a simple guide for those not specially trained.—J. M. C.

PARTS 213 and 214 of Engler and Prantl's *Natürlichen Pflanzenfamilien*, have appeared.⁵ The former contains the conclusion of the Isoetaceae by R. Sadebeck, and Cycadofilices, Cladoxyleae, Lyginopterideae, Medulloseae, Cycadoxyleae, Protopityeae, and Araucarioxyla by H. Potonié; also a supplement on Marattiaceae and Ophioglossaceae by von Bitter. The latter part contains a continuation of the Pottiaceae by V. F. Brotherus.—J. M. C.

Y. YABE⁶ has published a revision of the Umbelliferae of Japan, the prefatory notes being in English, and the body of the paper in Japanese. The revision includes 40 genera and 95 species, 28 being endemic, and 12 introduced. The largest genus is Angelica, in which several new species are described. The author appears not to have had access to the recent *Monograph* by Coulter and Rose, all reference to their work being in connection with the much earlier *Revision*.—J. M. C.

PERCY LEROY RICKER has published "A preliminary list of Maine fungi," being no. 3 of *The University of Maine Studies*. A "historical sketch of the study of the Maine flora" is given, followed by a "list of works and papers treating of Maine fungi." So far as possible, the collection containing the specimen cited is named, so that the right of any species to be

³ Preliminary diagnosis of new species of Laboulbeniaceae. V. Proc. Amer. Acad. 38: 9–57. 1902.

⁴ WIESNER, JULIUS, *Die Rohstoffe des Pflanzenreiches*, etc. Volume II, pp. 481–640. figs. 156–199. Leipzig: Wilhelm Engelmann, 1902. M 5.

⁵ Press of Wilhelm Engelmann, Leipzig.

⁶ *Revisio Umbelliferarum Japonicarum*. Reprint from *Jour. Coll. Sci. Imp. Univ. Tokyo*. 16²: [repaged] 1902.

regarded as a member of the flora can be tested. The classification is that of Saccardo's *Sylloge Fungorum*. The list includes 370 genera and 1136 species.—J. M. C.

PROFESSOR AVEN NELSON⁷ has prepared a *Key* to the common flowering plants of the Rocky mountain region, to be used by elementary classes of secondary schools in their first contact with the local flora. Such keys are insisted upon by publishers, much to the discomfort of botanists. But if they are to be published at all, they should be prepared by some one familiar with the flora. For the region presented in the *Key* before us no better selection could have been made than Professor Nelson, and every page shows familiar field contact. A few hundred plants of the spring and early summer are selected from the thousands belonging to the flora, and their descriptions and the keys are admirably simple and direct. Of course the author hopes that the little book will serve in inducing the proper study of the flora through the regular manuals.—J. M. C.

C. H. OSTENFELD,⁸ Inspector of the Botanical Museum of the University of Copenhagen, has undertaken to edit an illustrated arctic flora, published in English, the first part of which has just appeared. At the suggestion of Professor Warming, it was begun by the late Mr. O. Gelert, who had associated Mr. C. H. Ostenfeld with him. In March 1899, Mr. Gelert died, but about half of Part I may be credited to him. The ferns and seed plants of the arctic regions are recorded in many scattered lists, each author using his own nomenclature, so that their study is quite troublesome. This *Flora Arctica* includes all regions north of the limit of trees. A prefatory bibliography cites about 95 titles. The pteridophytes are represented by 30 species; the gymnosperms by 3; and the monocotyledons by 179, 54 of them being species of *Carex*. The printing and figures are excellent, the descriptions clear and sufficiently full, and the keys very simple.—J. M. C.

HEALD'S *Elementary Biology*⁹ is a laboratory guide covering a year's work for college students. It is unique in that there is as much space devoted to plants as to animals. Directions for working out a specimen of each of the great plant groups, including Schizophytes, Fungi, and Lichens,

⁷An analytical key to some of the common flowering plants of the Rocky mountain region. pp. vii + 94. New York: D. Appleton & Co. 1902.

⁸Flora Arctica, containing descriptions of the flowering plants and ferns found in the arctic regions, with their distribution in these countries. Part I. Pteridophyta. Gymnospermae, and Monocotyledones, by O. GELERT and C. H. OSTENFELD. Published by the Carlsberg fund: Copenhagen. 1902.

⁹HEALD, F. D., Laboratory manual of elementary biology. 8mo. pp. viii + 287. Binghamton (N. Y.): Willard N. Clute & Co. 1902.

are given in minute detail. The forms described were chosen evidently upon the basis of their widespread distribution, rather than because they are typical of the groups they illustrate, or are important from the standpoint of evolution. *Spirogyra*, *Vaucheria*, and *Chara* are the filamentous forms selected to give the student an impression of the green algae, and *Marchantia* is the only liverwort. It is an open question whether the day for laboratory guides has not passed. The well-trained teacher does not need one—finds it a hindrance in maintaining the plasticity of laboratory work, which should change year after year with the availability of desirable material and the personnel of the class.—F. M. LYON.

A NEW LABORATORY MANUAL of botany has been provided by Dr. Otis W. Caldwell.¹⁰ The book is the result of direct and personal contact with the needs and possibilities of botanical instruction in secondary schools of the middle West. It has avoided the too detailed and technical directions of manuals better adapted to colleges than secondary schools; and at the same time selects the essential features of the subject as now presented in the best schools. It does not seek to eliminate the teacher or the good reference book, but depends upon both to fill out and coordinate. It well meets the demands of schools where time and facilities and the age of pupils forbid the demands often made by zealous but inexperienced university instructors. A good selection of material is presented, so that there may be no difficulty in securing something illustrative. Of course, the wooden teacher will think that everything mentioned is to be used, but for such no suitable book can be written. The first part of the manual suggests ecological and physiological studies; the second part deals with the essentials of morphology.—J. M. C.

THE NINTH PART¹¹ of Engler's *Pflanzenreich* is a book of 437 pages, containing the Myrsinaceae by Carl Mez. After the usual introductory discussion, the 32 genera of this great tropical family are presented. The seven new genera are *Conandrium*, *Sadiria*, *Afrardisia*, *Tetrardisia*, *Amblyanthopsis*, *Discocalyx*, and *Grenacheria*. The total number of species described is 933, of which 348 are new. The large genera are *Ardisia* (235 spp.), *Rapanea* (136 spp.), *Maesa* (102 spp.), and *Embelia* (92 spp.). The fossil forms of nine genera are also described. The vast amount of material to be investigated in a single family like this is an impressive illustration of the magnitude of the work undertaken by Professor Engler and his associates.

¹⁰ A laboratory manual of botany. pp. x+107. New York: D. Appleton & Co. 1902.

¹¹ ENGLER, A., Das Pflanzenreich. Regni vegetabilis conspectus. Heft 9. Myrsinaceae von Carl Mez, pp. 437. Leipzig: Wilhelm Engelmann, 1902. M 23.

The tenth part¹² contains the Tropaeolaceae by Fr. Buchenau, who recognizes 50 species, but describes no new ones. The eleventh part¹³ contains the Marantaceae by K. Schumann, who after a somewhat detailed preliminary discussion presents the 26 genera, 11 of which (*Actoplanes*, *Sarcophrynum*, *Stachyphrynum*, *Halopegia*, *Afrocalathea*, *Monophrynum*, *Ctenophrynum*, *Phacelophrynum*, *Pleiotachya*, *Monophyllanthe*, and *Monotagma*) are described as new. The species number 277, the large genus being *Calathea* with 103 species, and 42 new species are described.—J. M. C.

IN A PAPER on plant distribution Bruncken¹⁴ has contributed some valuable ecological data. The first topic is the succession of forest types in the vicinity of Milwaukee. Three mesophytic associations are discussed; viz., oak, basswood-maple, and elm-ash. The oak is the most prevalent, though evidence is not lacking that it would become replaced by the basswood-maple association if not interfered with by man. Mixed with the basswood and maples near Lake Michigan the beech is found. This, the author states, is probably due to lake climate. There is evidence that a more xerophytic forest of white pine and white birch once prevailed along the lake shore. The second topic is the distribution of the genus *Viola*. After a careful study of the distribution of the various species, the author concludes that the occurrence of the more or less xerophytic species depends on the amount and quality of the humus. The third topic is the upland brushwoods of the Milwaukee region, their typical development being treated in detail. The fourth section is a list of plants collected on the Door co. peninsula, Wisconsin; the fifth discusses the forests and brush lands of northern Waukesha co., Wisconsin; the sixth presents lists of eastern Wisconsin plants from the herbarium of the Milwaukee Public Museum; the seventh is entitled "A tamarack swamp in Waukesha co.," and the eighth is a list of plants from Sheboygan.—H. N. WHITFORD.

A HANDBOOK of New England trees by Dame and Brooks¹⁵ has been added to the list of popular works in botany. Each tree is discussed under several topics, as the habitat and range, habit, bark, winter buds and leaves, fruiting characters, and the horticultural value. The description of the bark and of the winter buds will facilitate the identification of trees in their winter condition. The distribution of the trees in the different New England

¹² *Ibid.* Tropaeolaceae von Fr. Buchenau, pp. 36. *M* 1.80.

¹³ *Ibid.* Marantaceae von K. Schumann, pp. 184. *M* 9.20.

¹⁴ BRUNCKEN, ERNEST, Studies in plant distribution. Bull. Wisconsin Nat. Hist. Surv. 2: 17-28, 137-169. 1902.

¹⁵ DAME, LORIN L., and BROOKS, HENRY, Handbook of New England trees, with ranges throughout the United States and Canada. Boston: Ginn & Company, 1902. \$1.35.

states is given with great care and thoroughness. In the case of trees of infrequent or rare occurrence the authority for each station is given. The accuracy of these citations is made still more prominent by a list of authorites cited and of the trees with reference to which each is quoted. The discussions of the habit of trees also show clearly the result of accurate and painstaking field observations. The book is illustrated from excellent drawings by Mrs. Elizabeth Gleason Bigelow. If this volume is to help the student in the field, as the authors purpose, one would wish that the distinguishing characters of the trees were more fully emphasized. The fact that the New England pines, for example, with one exception, may be readily distinguished by the number of leaves in a sheath is not made prominent. A beginner might read several pages before knowing this simple guide to the pines. A combination of the fruit and leaf characters of the elms, birches, maples, and poplars often furnishes a ready test for the determination of the species. That such facts are emphasized, perhaps with one exception, neither by keys nor by typographic arrangement, will detract from the serviceableness of this pocket-sized volume in actual field work. Throughout the volume the authors use the terms fertile and sterile in referring to staminate and pistillate flowers. Such terms perpetuate a mistaken conception, and they are too antiquated for the present knowledge of plant reproduction. With these two exceptions this volume has a stamp of thoroughness and accuracy not often found in botanical handbooks designed for popular use.—C. D. HOWE.

A FLAX DISEASE of wide distribution and much economic importance has been diagnosed, studied, and traced to its cause by Professor Henry L. Bolley,¹⁶ of the North Dakota Agricultural College; and what is of practical moment an efficient method has been found to check or possibly wholly prevent the disease. Every cultivator knows that only a few successive crops of flax can be grown on a given piece of land with profit. The yield constantly decreases, and no system of manuring or cultivation has been found to overcome the difficulty. An interval of seven to eleven years is required before flax can be grown again with profit upon such a field. The trouble appears to exist alike throughout Europe and America. It is now ascertained to be due to a fungus, introduced chiefly with the seed, which is described as a new species of *Fusarium*, as follows:

FUSARIUM LINI Bolley in Bull. N. D. Agric. Station no. 50. p. 37. Vegetative hyphae light colored, $0.7-3\ \mu$ in diameter, septate, branching irregularly, ramifying the tissue of the stem and roots of the host. Spore beds (sporodochia) erumpent, compact, slightly raised, distinct but closely grouped upon the stems, pale cream to flesh-colored. Sporophores rather short and closely branched, or conidia sometimes arising from wart-like or nearly sessile prominences upon a compact stromatic base.

¹⁶ BOLLEY, H. L., Flax wilt and flax-sick soil. Bull. N. D. Exper. Station, no. 50; pp. 27-57. 1901.

Conidia normally four-celled, fusiform, slightly curved or falcate, copiously produced in a bud-like manner from the stroma and from short branches of the sporophores, $27 \times 3 \mu$ to $38 \times 3.5 \mu$. Living in the humus of the soil, able to attack the flax plant, producing the disease known as "flax wilt," and causing the soil condition described as "flax-sick soil."

This fungus attacks the young plants of flax and spreads somewhat slowly to older plants, and has the power to maintain itself for sometime saprophytically. The preventive is to moisten the seed before sowing with a solution of formaldehyde, care being taken to have the seed well cleaned, as no means have been found to disinfect bits of straw and imperfect seed mixed with good seed.

The bulletin is a fine example of deductive and experimental research.—
J. C. ARTHUR.

THE BOTANICAL INSTITUTE of the University of Brussels has begun to publish a collection of its work, of which Vol. V, with papers dated 1900 to 1901, is first to appear.¹⁷ Vols I-IV, containing papers from 1882 to 1900, are in preparation. The volume at hand has the following attractive contents: G. CLAUTRIAUX, Nature et signification des alcaloïdes végétaux, and La digestion dans les urnes de Nepenthes; E. VANDERLINDEN, Recherches microchimiques sur la présence des alcaloïdes et des glycosides dans la famille des Renonculacées, with 2 colored plates; J. MASSART, Le lancement des trichocystes chez *Paramoecium Aurelia*, Sur le protoplasme des Schizophytes with 6 colored plates, and Essai de classification des réflexes non nerveux; L. ERRERA, Sur la myriotonie comme unité dans les mesures osmotiques, and Sur une Bactérie de grandes dimensions: *Spirillum Colossus*; FR. VAN RYSELBERGHE, Influence de la température sur la perméabilité du protoplasme vivant pour l'eau et les substances dissoutes; J. STARKE, De la prétendue existence de solanine dans les graines de Tabac.

In the system proposed by Errera for the measurement of osmotic and gas pressures, the "tonie" is the pressure of 1 dyne on 1 sq.cm of surface; 10000 of these make the myriotone, which is approximately $\frac{1}{100}$ of an atmosphere. In the equation $\phi v = RT$, if ϕ is expressed in myriotones, R equals 8.32. The osmotic pressure of 0.1 mol. KNO_3 is computed as *ca.* 443 myriotones, considerably higher than the commonly accepted figure. Van Rysselberghe finds that while the temperature has great influence on the rapidity of the movement, water and various other substances (glycerine, urea, caffeine, methylene blue, and ammonium carbonate) can pass slowly through the protoplasm at zero. He holds that the slightest pressure is adequate, if given time, to force water through protoplasm or any other permeable mem-

¹⁷ Recueil de l'Institut Botanique (Université de Bruxelles) publié par L. Errera, Tome V. Bruxelles. 1902.

brane. Massart, on the protoplasm of the Schizophytes, concludes that the central body, even when it occurs, is not the homologue of a nucleus; nor is the "couche corticale" the homologue of a plastid. He regards the Schizophyceae as derived from the bacteria, but the group as a whole as nowise related to any other organisms. In his last paper, Massart introduces a deluge of new terms sufficient alone to form a supplement to any up-to-date dictionary. The analysis of the subject is clear, and in large part logically carried through; and a clean-cut vocabulary is prerequisite to clean-cut thinking, still more to lucid expression. Codifying such a terminology is an unqualified service to those who use it, as Czapek's forerunner has well proven, but every uninitiate will want to go armed with a "Nomenclator Massartianus" before "geanisopachynosis," "tonesagogic," "cathaptotropic," and the scores more like them become familiar terms.—E. B. COPELAND.

NOTES FOR STUDENTS.

NINE SPECIES of the Corallinae (verae) from Port Renfrew are described and figured by K. Yendo.¹⁸ Three of these are new species, viz., *Cheilosporum MacMillani*, *Corallina vancouverensis*, and *Corallina aculeata*.—B. M. DAVIS.

THE NEW *Oscillatoria beggiatoides* is a colorless sulphur-bearing organism described by Arzichowsky,¹⁹ and considered by him as a transition between *Oscillatoria* and *Beggiatoa*. The sulphur grains are very small and lie close to the cell wall. The account of this interesting form is to be found among the descriptions of several species of *Beggiatoa*. It deserves better treatment in a language and a journal that will reach more botanists. The paper is written in Russian, with a very short and unsatisfactory résumé in German.—B. M. DAVIS.

PTERYGOPHORA CALIFORNICA is described and figured by MacMillan,²⁰ who presents some interesting observations on its anatomy and development. Pterygophora is a surge plant growing below the zone of *Lessonia* and above that of *Nereocystis*. The general morphology is closest to *Alaria*, but the distribution of the sori found in the lateral pinnae, together with the "disposition of cuticular caps in the paraphyses," suggest *Lessonia*. Some of the plants are very large, being ten feet long with stalks three inches in diameter.

¹⁸ YENDO, K., Corallinae verae of Port Renfrew. Minn. Bot. Studies II. 6:711-722. pls. 51-56. 1902.

¹⁹ ARZICHOWSKY, W., Zur morphologie und systematik der *Beggiatoa* Trev. Bull. Jard. Imp. Bot. 2:45-46. pl. 1. 1902.

²⁰ MACMILLAN, CONWAY, Observations on Pterygophora. Minn. Bot. Studies II. 6:723-741. pls. -62. 1902.